PRELIMINARY DATA SHEET

SKY66319-11: 4800 to 5000 MHz Wide Instantaneous Bandwidth High-Efficiency Power Amplifier

Applications

- FDD and TDD 4G LTE and 5G systems
- Driver amplifier for micro-base and macro-base stations
- Enterprise small-cell and massive MIMO

Features

- Wide instantaneous signal bandwidth: up to 2 x 100 MHz carrier
- High-efficiency: PAE = 23% @ +28 dBm
- High linearity: +28 dBm with < –50 dBc ACLR with pre-distortion (100 MHz 5G, 8.5 dB PAR signal)
- High gain: 35 dB
- Excellent input and output return loss: to 50 Ω system
- Integrated active bias: performance compensated over temp
- Integrated enable On/Off function: PAEN = 1.5 to 2.5 V
- Single supply voltage: 5.0 V
- Pin-to-pin compatible PA family supporting major 3GPP bands
- Compact (16-pin, 5 × 5 × 1.3 mm) package (MSL3, 260 °C per JEDEC J-STD-020)

Skyworks Green™ products are compliant with all applicable legislation and are halogen-free. For additional information, refer to *Skyworks Definition of Green™*, document number SQ04–0074.

Description

The SKY66319-11 is a highly efficient, wide instantaneous bandwidth, fully input/output matched power amplifier (PA) with high gain and linearity. The compact 5 × 5 mm PA is designed for FDD and TDD 4G LTE and 5G systems operating from 4800 to 5000 MHz. The active biasing circuitry is integrated to compensate PA performance over temperature, voltage, and process variation.

The SKY66319-11 is part of high-efficiency, pin-to-pin compatible PA family supporting major 3GPP bands.

A block diagram of the SKY66319-11 is shown in Figure 1. The device package and pinout for the 16-pin device are shown in Figure 2. Table 1 lists the pin-to-pin compatible parts in the PA family. Signal pin assignments and functional pin descriptions are described in Table 2.

Table 1. Pin-to-Pin Compatible PA Family

Part Number	Frequency (MHz)	3GPP Band
SKY66312-11	2300 to 2400	Bands 30 and 40
SKY66317-11	2496 to 2690	Bands 7, 38, and 41
SKY66318-11	3300 to 3600	n78
SKY66313-11	3400 to 3600	Bands 22 and 42
SKY66320-11	3600 to 3800	Band 43 and n77
SKY66315-11	4400 to 5000	n79
SKY66319-11	4800 to 5000	n79

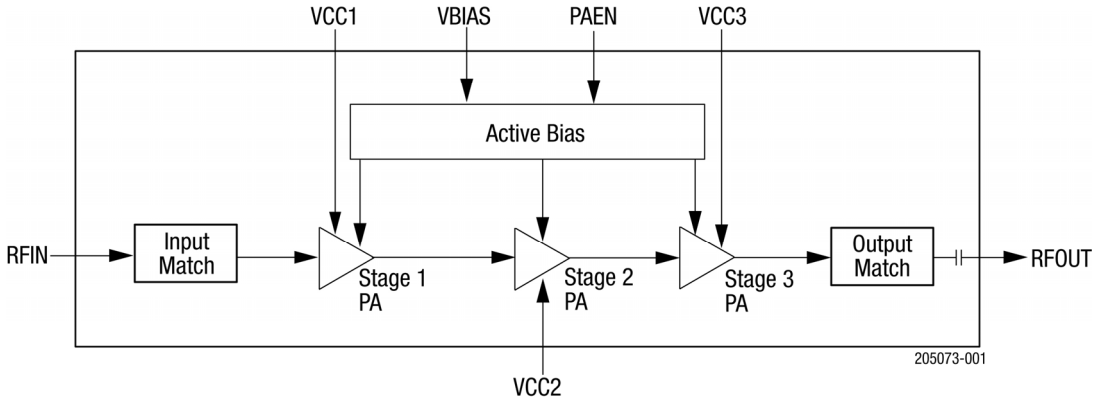


Figure 1. SKY66319-11 Block Diagram

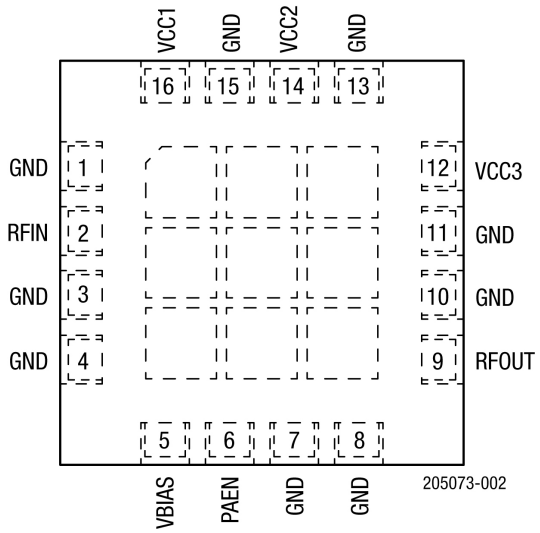


Figure 2. SKY66319-11 Pinout (Top View)

Table 2. SKY66319-11 Signal Descriptions[1]

Pin	Name	Description	Pin	Name	Description
1	GND	Ground	9	RFOUT	RF output port
2	RFIN	RF input port	10	GND	Ground
3	GND	Ground	11	GND	Ground
4	GND	Ground	12	VCC3	Stage 3 collector voltage
5	VBIAS	Bias voltage	13	GND	Ground
6	PAEN	PA enable	14	VCC2	Stage 2 collector voltage
7	GND	Ground	15	GND	Ground
8	GND	Ground	16	VCC1	Stage 1 collector voltage

1 The center ground pad must have a low inductance and low thermal resistance connection to the application's printed circuit board ground plane.

Technical Description

The matching circuits are contained within the device. An on-chip active bias circuit is included within the device for both input and output stages, which provides excellent gain tracking over temperature and voltage variations.

The SKY66319-11 is internally matched for maximum output power and efficiency. The input and output stages are independently supplied using the VCC1, VCC2, and VCC3 supply lines (pins 16, 14, and 12, respectively). The DC control voltage that sets the bias is supplied by the VBIAS signal (pin 5).

Electrical and Mechanical Specifications

The absolute maximum ratings of the SKY66319-11 are provided in Table 3. Recommended operating conditions are specified in Table 4, and electrical specifications are provided in Table 5.

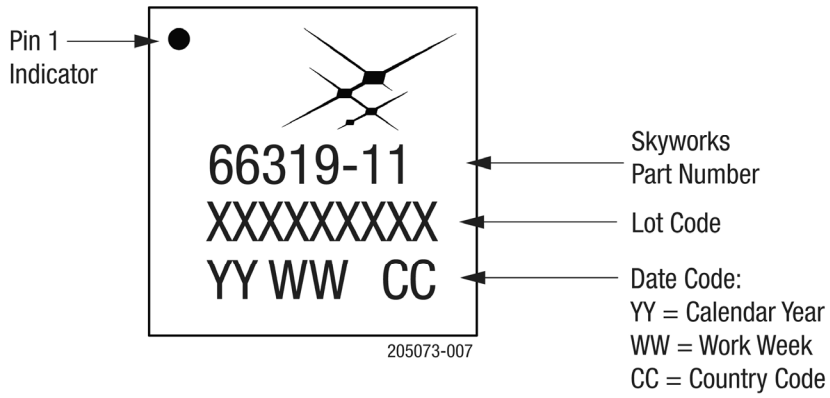
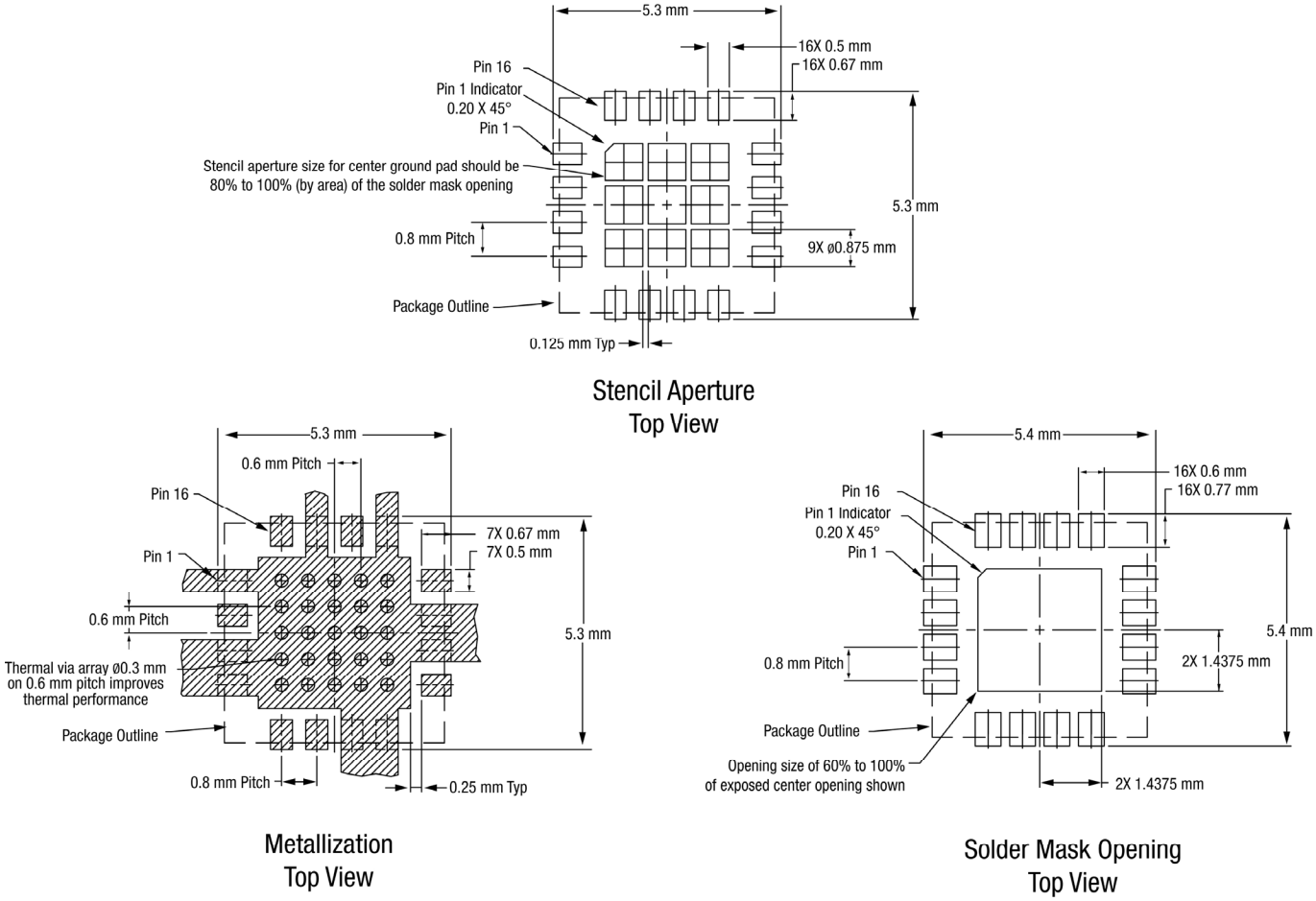


Figure 7. SKY66319-11 Typical Part Marking

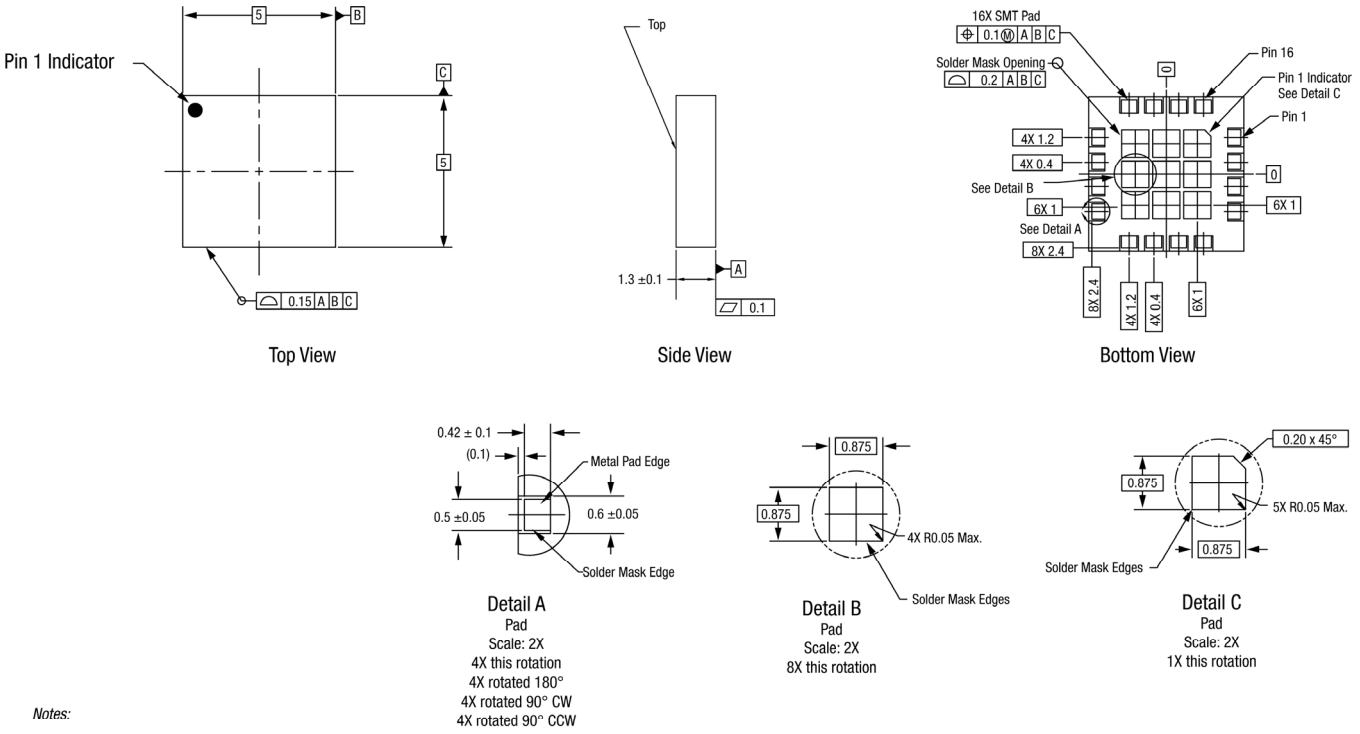


Notes:

1. *Thermal vias should be resin filled and capped in accordance with IPC–4761 type VII vias.*
2. *Recommended Cu thickness is 30 to 35 µm.*

205073-008

Figure 8. SKY66319-11 PCB Layout Footprint

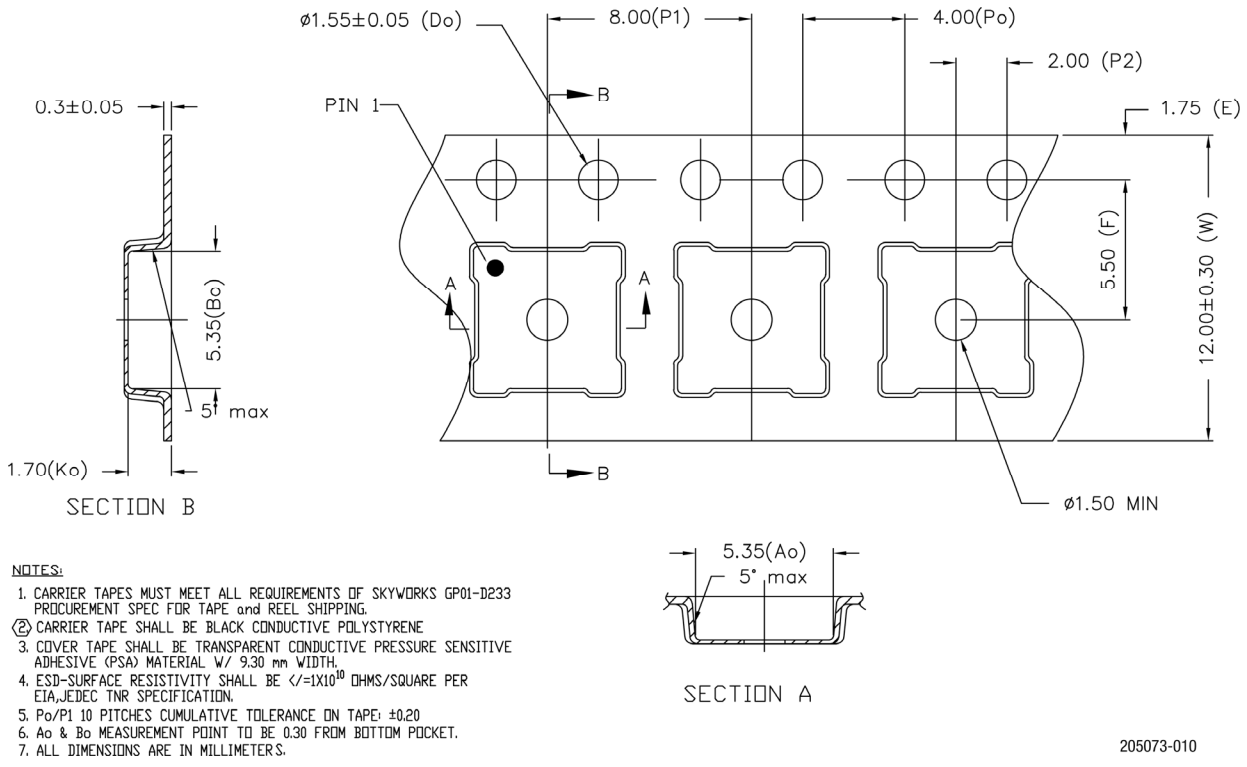


Notes:

1. *Dimensions are in millimeters (unless otherwise specified).*
2. *Dimensions and tolerances are in accordance with ASME Y14.5M–1994.*

205073-009

Figure 9. SKY66319-11 Package Dimensions



NOTES:

1. CARRIER TAPES MUST MEET ALL REQUIREMENTS OF SKYWORKS GP01-D233 PROCUREMENT SPEC FOR TAPE and REEL SHIPPING.
2. CARRIER TAPE SHALL BE BLACK CONDUCTIVE POLYSTYRENE
3. COVER TAPE SHALL BE TRANSPARENT CONDUCTIVE PRESSURE SENSITIVE ADHESIVE (PSA) MATERIAL W/ 9.30 mm WIDTH.
4. ESD-SURFACE RESISTIVITY SHALL BE </=1X10^{10} OHMS/SQUARE PER EIA,JEDEC TNR SPECIFICATION.
5. Po/P1 10 PITCHES CUMULATIVE TOLERANCE ON TAPE: ±0.20
6. Ao & Bo MEASUREMENT POINT TO BE 0.30 FROM BOTTOM POCKET.
7. ALL DIMENSIONS ARE IN MILLIMETERS.

205073-010

Figure 10. SKY66319-11 Tape and Reel Dimensions